FHWA Docket No. FHWA-2001-8954
National Bridge Inspection Standards

Application of Standards

Should the FHWA develop its own definition of a bridge for the purpose of inspection and reporting? No. In general, the existing definition of a bridge is adequate and has been accepted by most public officials. There may be areas in which the current definition could be clarified, but it would likely be difficult to establish a consensus on modifications/clarifications.

Should the FHWA definition change the way the bridge length is determined or what the minimum bridge length should be for reporting purposes? In most situations, the existing 20-feet (6.1-meter) length along centerline of roadway requirement is adequate. One area where this requirement may need attention lies with highly skewed, short-span reinforced concrete box culverts. In this situation, even though a vehicle wheel may pass over twenty feet or more of length on a multi-cell structure (again, measured along roadway centerline), the load path along the reinforcing to the wall is still representative of only the span length of the individual cell. As such, the minimum bridge length definition for reporting of such structures may need to be revised.

What impact will the possible inclusion of more bridges be (1) on public authorities complying with this as an NBIS requirement, (2) or on the FHWA which maintains the inventory, (3) or on the HBRRP funds? The most obvious impact to public authorities would be more dollars spent within their respective bridge inspection programs. Workloads imposed upon inspection and inventory managers would likely increase, as would the volume of data submitted to FHWA.

Inspection Procedures

What impact will changing the underwater inspection intervals have on public authorities complying with this as an NBIS requirement? In my opinion, the requirement for underwater inspection should be identical to the requirement for above-water inspection. If the above-water portion of a bridge member requires inspection every 24 months, then the underwater portion of that same member should also be inspected every 24 months, regardless of access requirements. Out of sight should not be out of mind, especially considering the percentage of bridge failures attributable to causes that occur underwater, such as scour.

What, if any, would be the impact on public authorities complying with evaluation of scour at bridges criteria within the NBIS regulation? There would likely be little impact if the scour requirements were incorporated in the NBIS as opposed to the FHWA Technical Advisory T5140.23. I would agree with this proposition.

Frequency of Inspections

Should the 4-year interval be increased so that more bridges would be eligible for the extended inspection cycle? No. The existing is plan works well as is. As our infrastructure continues to deteriorate, bridge inspection activities will likely increase in frequency, in order to accommodate data gathering required for bridge preservation activity, (i.e. bridge maintenance and rehabilitation). It makes little sense to consider increasing inspection frequencies on an infrastructure that continues to age. The existing plan accommodates increased inspection frequency for bridges meeting certain conditions. Perhaps more latitude could be given to individual states to self-determine which structures meet those conditions, and to self-assign increased inspection frequencies, accordingly. In no event, however, would I wish to see inspection frequencies of greater than 4 years be allowed.

What would be a reasonable interval? 4 years, maximum, for those structures meeting selected conditions, such as new RCB structures in benign environments. We must not forget about such occurrences/processes as impact damage, degradation, and aggradation, which tend to be less predictable than structural materials deterioration, but which can cause major impact to the functional capability of a bridge. As these occurrences may only be discovered and monitored by the field inspection of the bridge, I, personally, do not feel comfortable with having field inspections performed less frequently than at present.

What impact would this have on the safety of bridges? A continuation of present practice should have no damaging effect on the safety of our bridges. Again, as bridge structures continue to age, I would anticipate that inspection demand would increase, accordingly.

Qualification of Personnel

Should the individual in charge of the inspection and reporting, who is a PE, be required to have the same training as bridge inspectors and have additional experience in bridge inspection? YES. Current regulations allow a Registered Professional Engineer to be in charge of a function in which the individual has limited experience, as the discipline of the P.E. is not specified. Even a Civil P.E. may have little experience in bridges or in inspection, other than what he/she may remember from their academic experience. This is not good enough. In order to be effective, the individual in charge of an inspection group must be able to provide leadership and guidance to his/her subordinates. This requires directly relevant experience and training. I believe the academic experience of the individual should be counted as comparable to field inspection experience in year-for-year fashion, UP TO 4 years, maximum.

Should the NBIS regulation be more specific as to the discipline of the professional engineer responsible for these bridge inspections and what impact would this change have on public authorities complying with this? ABSOLUTELY. Impact would be positive to all parties.

What impact would requiring certification training in proportion to the complexity of the bridge structure being inspected, and making this a part of a requirement for inspectors under the national bridge inspection program have on public authorities complying with this as an NBIS requirement? In the field of bridge inspection, I believe there is no substitute for experience. Much of the professional growth of the inspector comes from years spent in the field actually conducting bridge inspections. This experience is well reflected, I believe, in the resume of the individual inspector. I don't believe that a certification-training program could effectively substitute for years of documented experience. When looking to hire or assign an individual to a particular task, I would look for an individual with a commensurate resume, and not just a few certificates of training. NICET offers the individual different levels of certification in Bridge Safety Inspection, each of which require a commensurate combination of documented experience and formal testing. Perhaps the FHWA could look at this as a viable avenue for ensuring inspector competency.

Should those performing underwater inspections be qualified licensed professional engineers? This should absolutely NOT be a requirement! Underwater bridge inspection is a form of commercial diving, far and away different from recreational SCUBA diving. It takes many years of experience to become adept at working underwater in the hostile conditions exhibited at many, if not most, bridge sites. Professional Engineering is yet another field requiring years of experience. Nationwide, I believe there are currently less than a couple dozen individuals who are active as both P.E.s and truly certified commercial divers (as opposed to recreationally trained SCUBA divers). Further, many of the nation's best underwater bridge inspectors; those most adept at FULLY ACCESSING AND REMAINING at the underwater work site, are not engineers, but are experienced commercial divers, and who are either bridge inspection team leaders, or assistant inspectors, acting as the eyes and hands of the engineer/team leader (who is also physically present at the bridge site). Individuals performing underwater bridge inspection need not be required to be engineers, but should be required to show documented commercial diving training and experience, in accordance with criteria specified within the Association of Diving Contractors International (ADC) Consensus Standards for Commercial Diving Operations, and the American National Standards Institute (ANSI) Commercial Diver Training-Minimum Standard (ANSI/ACDE-01-1998).

What impact would requiring the underwater inspector to be an engineer have on public authorities complying with this as an NBIS requirement? There simply would not be a great enough supply of engineer-divers available to meet the demand. Additionally, many of those attempting to act as engineer-divers may perform poorly underwater, due to lack of diving expertise, and the quality of the resulting inspection would likely suffer. Inspector qualifications for underwater inspectors should mirror those for above-water inspectors. If any new qualifications are to be imposed upon the underwater inspection community, they must certainly be related to diving qualifications.

Inspection Report

What, if any, would the impact be on public authorities complying with only allowing the inspector who was out in the field to change the inspection report as an NBIS requirement? I believe this would be a good requirement to place in the NBIS, IF the requirement were worded such that all questionable areas within an inspection report would require discussion between concerned parties, in order to seek common ground, with subsequent alterations being made by the inspector. The primary impact encountered by public authorities would likely be an increase in the total time between field inspection and report acceptance/approval by the state agency, due to the "turn-around" time consumed in the process of discussing and rectifying questionable comments, ratings, etc., with the inspector. In my experience, it is better for the manager to question the inspector and seek common solution, rather than for the manager to modify another's work. Imposing such a requirement in the NBIS would certainly help to eliminate this practice.

Inventory

Should the reporting requirements for the NBIS be changed and what, if any, would the impact be on public authorities complying with this? The reporting requirements appear reasonable and need not be changed.